Sabarmati Riverfront Development

Integrated Environmental Improvement and Urban Revitalization



Sabarmati River Front Development Corporation Ltd., Ahmedabad HCP Design, Planning & Management Pvt. Ltd., Ahmedabad

Ahmedabad and the Sabarmati

Ahmedabad was established on Sabarmati in 1411



Ahmedabad and the Sabarmati - 1672



Sabarmati and the Growth of Ahmedabad



Ahmedabad and the Sabarmati – 2013



Sabarmati has always been important to Ahmedabad

As a source for drinking water



As a place for recreation



As a place to gather



As a place for the poor to build their hutments



As a place for washing and drying clothes



As a place for holding the traditional 'Sunday Market'



As a place for farming



Gandhiji built his ashram on the bank of Sabarmati in Ahmedabad



And yet, Sabarmati was abused and neglected

It became a place to dump garbage



Stormwater drains spewed untreated sewage into the river



A few nalas brought sewage into the river



Sewage from the slums flowed directly into the river



Encroachments reduced the river's flood carrying capacity



Haphazard and dull development came up along the riverfront





The river became inaccessible to the public



The bridges were the only places from which the river could be enjoyed



The river became insignificant in the life of the city



The city turned its back to the river



Other Cities and their Waterfronts

Waterfronts of many cities are a stark contrast



London



New York



New York



Chengdu



Singapore



Shanghai



Mumbai

These waterfronts were designed and developed as meaningful public spaces for enhancing life in the city

London - 1817...



London - 1857...



Anon.

London - 1857...

'An extraordinary history'

Peter Ackroyd The Times

THE GREAT STINK of LONDON SIR JOSEPH BAZALGETTE AND THE CLEANSING OF THE VICTORIAN METROPOLIS

STEPHEN HALLIDAY FOREWORD BY ADAM HART-DAVIS



London - 1857...



London - 1875...



THE VICTORIA EMBANKMENT LOOKING TOWARDS ST PAUL'S, c. 1875

London - 1875...



London - 2010



New York - 1930...



New York - 1995...



Singapore - 1960...



Singapore - 2011...



Chengdu - 1993...



Chengdu - 2011...



Back to Sabarmati and Ahmedabad

The abused and neglected Sabarmati



The AMC created a "wholly owned" company to develop the Sabarmati riverfront



Proposal for Sabarmati Riverfront Development 1998



- Physical Features of the River
- River Hydraulics
- Land Reclamation and Embankments
- Land Ownerships
- Water Retention
- Ground Water Recharge
- Land Use and Road Network
- Infrastructure Services
- Resettlement and Rehabilitation
- Implementation Strategy
- Project Costs and Revenue Potential
- Financing, Structure of the SRFDCL and
- Development Management

А Multidimensional Environmental Improvement, Social Upliftment and Urban Rejuvenation Project

Gujarat, Sabarmati, Ahmedabad and the Narmada

Gulf of Cambay

Ahmedabad

Gulf of Cambay



Sabarmati River



Catchment Area under control Dharoi Dam Hatmati Dam Guhai Dam Catchment Area Ahmedabad Gulf of Cambay

Catchment Area under control

Dharoi Dam — Hatmati Dam —

Guhai Dam-

Vasana Barrage-Fatehwadi Canal Ahmedabad

Gulf of Cambay

Vasana Barrage



Water retained by the Vasna Barrage



Water used up for irrigation



- Catchment Area under control

Dharoi Dam Hatmati Dam

Guhai Dam-

Vasana Barrage-Fatehwadi CanalAhmedabad

Sabarmati River

Narmada River



Lakes of Ahmedabad



Lakes of Ahmedabad



Ambitions of the Sabarmati Riverfront Development Project

А Multidimensional Environmental Improvement, Social Upliftment and Urban Rejuvenation Project



OBJECTIVES
- 1. Make the riverfront accessible to the public
- 2. Stop the flow of sewage, keep the river clean and pollution-free
- 3. Provide permanent housing for riverbed slum dwellers
- 4. Reduce risk of erosion and flooding in flood prone neighborhoods
- 5. Create riverfront parks, promenades and ghats to enjoy the water
- 6. Provide Ahmedabad with new cultural, trade and social amenities
- 7. Revitalize riverfront neighborhoods, rejuvenate Ahmedabad
- 8. Generate resources to pay for all of the foregoing
- 9. Create a memorable identity for Ahmedabad

Make the riverfront accessible to the public





River Training and Land Reclamation – The Original Context



River Training and Land Reclamation

- Defined Waterway 275 m wide
- Total Reclamation area 202 Hectares



The Construction Process – Original Context



The Construction Process – Working Platform



The Construction Process – Working Platform



The Construction Process – Diaphragm Wall and Anchor Slab



Diaphragm Wall and Anchor Slab



Diaphragm Wall and Anchor Slab



Diaphragm Wall and Anchor Slab



The Construction Process–Retaining Wall and Earth Fill



Retaining Wall















Source – 26th February 2011, DNA

Stop the flow of sewage, keep the river clean and pollution-free















Interceptor sewage line being built



Interceptor sewage line being built



The sewage will soon stop flowing into the Sabarmati!

Provide permanent housing for riverbed slum dwellers






Relocation of Riverbed Slum Dwellers - Socio Economic Survey of Riverbed Slums

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Relocation of Riverbed Slum Dwellers - Socio Economic Survey of Riverbed Slums



Relocation of Riverbed Slum Dwellers – Relocation Sites



Rehabilitate riverfront displaced: HC to AMC

TIMES NEWS NETWORK

Ahmedabad: The Gujarat High Court on Monday directed the Ahmedabad Municipal Corporation (AMC) to rehabilitate 4,000 families who have lost their homes on the riverbed due to the Sabarmati River Front Development project.

During a hearing on a PIL filed by three organisations against eviction of people living on the riverbed for the riverfront project, a division Bench of Chief Justice SJ Mukhopadhaya and Justice MS Shah asked the civic authorities to rehabilitate 4,000 families residing on the stretch between the Subhash Bridge and Ellisbridge to a rehabilitation site identified in Balol Nagar in Wadaj area. This



rehabilitation is the first phase of the shifting of affected people.

The court has asked AMC to complete rehabilitation process of these people within two months and come up with a status report on March 8. In the meantime, the issue of variation in figures of project affected people was also discussed during the hearing. While the The court has asked AMC to complete rehabilitation process of these people within two months and come up with a status report on March 8

civic body claims that the project affected people are nearly 8,000 families, a study conducted by IIM-A and a people's forum — Nagrik Aadhikar Manch place the figure at around 20,000 families.

After hearing the dispute, the division bench directed the authorities to place complete scheme of rehabilitation for the River Front Development affected people. Giving the monitoring rights to the petitioners, the court also asked the authorities to include representatives of people's forum to coordinate rehabilitation process. In case of any dissatisfaction in rehabilitation work, the judges have asked the affected people to approach the court immediately.

In the scheme of rehabilitation, constitution of a committee under chairmanship of a retired high court judge to look after the shifting process was proposed in the plan. However, this is yet to take place. The dispute is also regarding the Sunday market that takes place on riverbed for centuries. The petitioners contend that they will also be affected by the project.

Relocation of Riverbed Slum Dwellers – Housing Allotment



Riverfront slum dwellers will soon all have permanent housing!



Households within project area: 5984 (as per 2002 survey) Additional households approved by the Gujarat High Court: 5752 Total households entitled to a house: 11736

Cost of house: Rs. 12 lacs Contribution of beneficiary: Rs. 66,900 Sites allotted for relocation: 29

Total number of households who have been allotted a house: 11196 Total number of relocated households : 8396 (30th August 2012)











Reduce the risk of erosion and flooding in flood prone neighborhoods

The Sabarmati in Flood, 2006



Private Flood Protection Walls





Private Flood Protection Walls



Contour Map of Ahmedabad



The Defined Waterway and Reclaimed Land



Risk of erosion has been eliminated and that of flooding in low lying neighborhoods has been significantly reduced!



Create riverfront parks, promenades and ghats to enjoy the water







Parks, Promenades and Ghats



Park – Khanpur



Park – Khanpur



The Heritage Park – Lal Darwaza



The Heritage Park – Lal Darwaza



Lower Promenade – Ashram Road



Lower Promenade – Ashram Road



Lower Promenade - Shahibaug



Lower Promenade - Shahibaug











Gandhi Ashram


Gandhi Ashram



Pirana Sports Ground and Paldi Urban Forest

Sports Ground

Vasna Barrage



Ambedkar Bridge

Urban Forest

The Sabarmati Riverfront Project will add almost 10,00,000 sq. mts. of parks, promenades and plazas to Ahmedabad!



Lower Promenade – Shahibaug



Lower Promenade – Shahibaug





Lower Promenade – Kite Festival, 2012



Lower Promenade – Kite Festival, 2012



Lower Promenade – Kite Festival, 2012























PROMENADE OF JOY

Bhadresh Gajjar



Amdavadis enjoying river breeze at the newly inaugurated Sabarmati Riverfront on Sunday

Source – 20th August 2012, Times of India



RIVERFRONT MUSINGS

Amdavadis were seen enjoying the weather at Sabarmati riverfront walkway on a beautiful Sunday morning, colourful umbrellas in hand. The visitors including senior citizens, couples and children celebrated the weather, singing, dancing and posing for the cameras they had got with them. A brimming river reflected the joy in their hearts.

Source – 12th August 2012, Times of India





The weather has been amazing in the last few days in *aapnu Amdavad*. Corn *laaris* have suddenly sprung up across the city in good number. And this has inspired me for a morning stroll at the newly-opened Riverfront. It is stunningly gorgeous

in the morning as I have been for strolls there earlier as well. With my hubby and son, I plan to go there with some compreparations along. I take my son Jayraj to places like Adalaj ni Vav so that he knows more about the city we live in and the Riverfront would be a good developmental project to show him around.

The Riverfront has a nice pathway and benches where one can sit and relax. It is a place which is in the heart of the city, yet away from all the hustle and bustle.

Source – 17th September 2012, Ahmedabad Mirror

COME, TELL OS, ME ARE ALL LARD

THE STARTS A LOUNCE TO EXCOURAGE STARTUPS

Washroom zen ANERI PANCHAL AND RICHA G Uberol arts, ROPU

RIDAD ING SPACE uniforgy weath money

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group is fall-down," the said.

Positive vibes

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CAMPUS BEAT



n hal's favourse got to study is her childhood scene, full of shafted toget But these hows see a lot source there year immediate of her childhood. According to Truitals, the staffed tops give her a secse of proce and condidence. Some thank that the idea is preporterous. But I have always full that the pressure of roy stated and fully me study better, " the stat.

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United to other, beyond by Sex brother, the herofision with off fow list that down? bother fail. The flands I smorthly But these toys give son positive energy "

Study haven

Having a study area with an old table and chair with a soft board on the wall is such a passé. Now-a-days, students choose the 'perfect' study spaces that calm their nerves and help them foces, find out HEYATI RANA and KRUTI MALK

Perfect ambience

ANSHITA SOLANKI, 25 MK. Coglick Honolocu, IGAGA PEABING SPACE Taleschalt Preservant

For most Analogueda, Takamati Browfront is a place to converse with huntly on diffusion. Some use if the memory with sand an organized run. Tottlay And this is the period of the probability of the probest the stretch behand the V2 Norphal A student of Studich Incontrary, dat out 4, % of have to such actival and wetchplays, beseatchil anobience of the covering at - the setting ing, chapter, poll back and soulking by the water of the perfect study antisence for me. I believe, whenever I read, Trene, it not only boosts my confidenos bot si in heips the imagine and under has d." Mania werks the altro and to die gets time only on weakened to go to some Trail.

On weekdays, due studie to her reason, wanted to achieve the matchplays online and refer to online restorial liveles hat 15 warshes on her two wheder to drive from Victoria Circle to Riverboot Jive particle runnelly teen factors in day set the method, wading tiction. The said, concervised the place with communa hi do playto-shout, to walk and do creative activities maniform (1) and the We (1) as references of the Line Board.







Source – 14th April 2015, Ahmedabad Mirror

Provide Ahmedabad with many new cultural, trade and social amenities

Temporary Event Ground Between Gandhi & Nehru Bridge



Cultural, Trade and Social Amenities



Cultural, Trade and Social Amenities









Overview of the Event Ground



Garden

Temporary Event Halls Stage

Trade Fair Complex – View from River



Riverfront Market – Service road and Access



Riverfront Market – Service road and Access






Riverfront Market



Riverfront Market



Informal Market at "Delite-Junction"











The Sabarmati Riverfront Project will help provide Ahmedabad with many new cultural trade and social institutions!



Revitalize riverfront neighborhoods Rejuvenate Ahmedabad

The Riverfront Project can transform all of Ahmedabad . . .



The Riverfront Project can transform all of Ahmedabad . . .



Planning Precincts



- 1. Paldi Residential Neighborhood
- 2. Cultural Mile
- 3. Health-care Hub
- 4. B J Park Institutional Precinct
- 5. Ashram road Business District
- 6. Ashram road Mixed Use Precinct
- 7. Gandhi Ashram Heritage Precinct
- 8. Sabarmati Residential Neighborhood
- 9. Sabarmati Redevelopment Precinct

- 10. Shahibagh Residential Neighborhood
- 11. Shahibagh Institutional Precinct
- 12. Dudeshwar Mixed Use Precinct
- 13. Khanpur Mile
- 14. Lal Darwaza Heritage Precinct
- 15. Fair and Market Precinct
- 16. Calico Redevelopment Precinct
- 17. Pirana Precinct
- 18. Lower Promenade

Planning Precincts – Ashram Road



Planning Precincts – Ashram Road



Planning Precincts-Shahibaug



Planning Precincts-Shahibaug



Generate resources to pay for all of the foregoing

Masterplan Proposal (Landuse) - 1998



TOTAL

162.799

100.00

95

120

C1 PROJECT COSTS AND REVENUE POTENTIAL

This section and Drawing No. 29 present preliminary cost estimates and a preliminary estimate of the revenue potential.

Project Costs

At this stage of work the various SRFD Proposals have only been schematically defined. Its arrive at the preliminary base cost estimate for the project, at various places, it has been necessary to use approximate quantity estimates. It has also been necessary to make assumptions regarding the eventual design of various components. Unit rates used to derive costs are based on these assumptions and prevailing market conditions. On account of this the project cost may vary when detailed design is undertaken. Effort has been made to include all foreseeable costs. Wherever it is not possible to estimate costs at this stage, it has been clearly indicated. Calculations for quantity estimation, design assumptions, and the sources used for determining unit costs have been adequately documented and are available with EPC. A value engineering exercise will be carried out in the next phase of work.

Preliminary cost estimates for the different components of the project are presented below. Drawing No. 29 shows the location of item numbers 7, 8 and 10 to 14.

No.	Barn	Quantity	Unit	Unit Rate (Rs)		Ham Total (Fit Crores)
1	Earthfiling	11,372,008	ou m	40	45.49	45.49
2	Retaining Wall (iff earth +cc panels)	135,000	100 (11)	2,123	28.66	28.66
3	Parapet wall	18,000	10	0.928	16.07	16.07
4	Disphragn wait	18,000		45,908	82.63	82.63
5	Bridge anchoring	168	girtler	1,10,000	2.07	2.07
6	Bridge foundation garland blocks	1.090	OU IN	3,000	6.33	6.33
7	Water Supply					
7.1	Mains (mest)	8,774		7.544	6.62	
7.2	Maine (west)	7,590	1.00	7,544	6.73	
7.5	Branch lines (sast + west)	4.000		054	0.38	12.75
8	Severage					
8.1	Trunk sewer (east)	11,758	1.10	1.800	1.08	
8.2	Trunk sewer (west)	10,604		1,300	1.38	
8.3	Branch lines (east + west)	4,000		500	0.20	
8.4	Man holes @ 30m ot:	746	No	20.000	1.49	
8.5	Pumping stations.		No.	1000.000	0.80	5.75
9	S.W. drain extensions					
9.1	Slab culvert (wast)				2.02	
9.2	Slab culvert (west)				1.62	
6.9	Pipe culvert (wast)				0.06	
9.4	Pipe sulvert (west)				0.17	
9.5	Stilling basin	24	No.	1.31,765	0.32	4.18
10	Roads					
10.1	L1: Cartiageway (east) (8400x21m)	176,400	84.00	725	12.79	
10.2	1.1: Foolpath (assi) (8400x15m)	126,000	1942 (19	700	0.82	
10.3	L2: Carriageway (west) (6800x14m)	95,200	9.0 m	725	6.90	
10.4	L2: Footpath (west) (6800x16m)	108,800	aq m	700	7.82	
10.5	L3: Carriageway (3680x10H)	36,600	842 75	725	2.87	
10.0	L3: Footpath (3680x6m)	18,400	aq m.	700	1.29	
10.7	L3: Cul-de-sac	3.500	80 10	725	0.25	40.34

Revenue Potential

It is proposed that approximately 21 percent of the reclaimed land (34.6 ha) be sold for residential or commercial development. To estimate the revenues that are likely to accrue from the sale of land, a systematic analysis of land prices along the riverbanks during the last five years was undertaken. Based on this and the proposed development of infrastructure and other facilities on the reclaimed land a forecasting exercise was carried out. Each parcel of land for sale was inseled separately – therefore each parcel's location, new facilities and existing developments sumounding it, and potential for development were taken into consideration.

The lable below shows the revenue estimated from the sale of the land. Drawing No. 15 shows the location of the various parcels of land.

No	Location of Parcel of Land	Proposed Landuse	Area (sq m)	Eatimate Land Price Raleg m	Entimate Hevenue Rs Crores
6	Between Subhash Bridge and Proposed Bridge 1	Commercial.	33,246	10,000	33.25
75	Between Proposed Bridge 1 and Proposed Bridge 2				
-12	Between Proposed Bridge 2 and Gardty Bridge	Peridential	20,441	6,000	12.26
46	Between Ganchi Bridge and Nehru Bridge	Commercial	\$2,300	15,000	78.45
16	Between Netro, Bridge and Ellis Bridge				
68	Between Ellis Bridge and Sandar Bridge				
π	Between Bandar and Proposed Brotpe 3	Connectat	11,992	5,000	6.00
82	Between Proposed Bridge 3 and Views Barriege	Commercial	10.779	5.000	5.30
	Bubtotal		128,758		135.35
197	Between Subheat Bridge and Proposed Bridge 1				
299	Between Proposed Bridge 1 and Proposed Bridge 2				
314	Between Proposed Bridge 2 and Gandhi Bridge	Commercial	3.040	7,500	2.28
411	Between Garothi Bridge and Notes Bridge	Connectial	09.940	20,000	179.86
50	Between Netwa Bridge and Ellis Bridge	Commercial	758	20,000	1.52
6W	Between Dis Bridge and Sander Bridge	Residential	104.302	12,000	125.16
TW	Between Santar and Proposed Bridge 3				
200	Between Proposed Bridge 3 and Vasna Bartige	Commercial	19,539	7,500	14.65
	Bubbetal		217,579		373.49
	Total		346,337		458.84

It should be noted that the cost of capital (interest on the loan funds) has not yet been added into the project costs. The entire costs mentioned in the above table on costs will be spread over a period of 5 years. The revenues estimated from the sale of land are likely to accrue over a longer period of time. The revenues would be dependent on a number of factors namely, the compretion of the reclamation works, construction of embanisments, provision of infrastructure services and establishment of major connecting roads. These factors are listed for each salesble period of land in the table next page:

SQ -----

Proposed Landuse – June 2010





Saleable Land – SRFD Project



Total Amount of Land – 2,97,119 sqm

Total Floor Area (Construction) – 9,52,268 sqm

Total Revenue – 1500 Crore

Project Cost - 1103.42 Crore

S R F D C L Area Statement of Proposed Draft Land use							
No	Proposed Land Uses	Area (Sq.m.)	Area (Ha.)	%			
1	Roads	403562.36	40.36	19.69			
2	Garden	274585.49	27.46	13.40			
3	Opne Space	376610.71	37.66	18.38			
4	Public Purpose	281812.29	28.18	13.75			
5	Lower Promenade	273892.72	27.39	13.37			
6	Multi Use (For Sale)	297119.07	29.71	14.50			
7	Sports Purpose	67380.52	6.74	3.29			
8	Public Utilities	8360.27	0.84	0.41			
9	Residential Zone-I (Residual)	7988.55	0.80	0.39			
10	Commercial Zone-I (Residual)	55937.53	5.59	2.73			
11	General Industrial Zone (Residual)	916.14	0.09	0.04			
12	Educational Zone (Residual)	822.92	0.08	0.04			
13	Burial Ground (Residual)	108.44	0.01	0.01			
	Total	2049097.00	204.91	100.00			

Commercial Development – Sardar Bridge



Commercial Development – Khanpur



Commercial Development – Subhash Bridge





Create a memorable identity for Ahmedabad























This city will be known for bringing the Sabarmati back to Ahmedabad and for bringing Amdavadis back to the Sabarmati THANK YOU